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Comparitive Analysis of Simhanada and Vatari Guggulu

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ABSTRACT

Guggulu is the resin obtained from Commiphora mukul which is widely used in case of vata-kaphaja rogas especially vata vyadhi. Several guggulu formulations have been explained in the books of Ayurveda but two formulations namely; Simhanada and Vatari Guggulu stand out amongst them. They are both mentioned in Bhaishajya Ratnavali of Govinda Das in the context of Amavata but Simhanada Guggulu was also first mentioned in Chakradutta. Though mentioned in the same book and in the same chapter, they contain the same ingredients. The only difference among them is the proportion of ingredients and method of preparation. Very specific indications have been explained for both the formulations apart from the main indication - Amavata. Aiming to understand what sets these formulations apart, they were prepared and analysed. However, the preparation, though done in accordance with the method explained in Bhaishajya Ratnavali, was a bit difficult. Several trials were done, to prepare both the formulations and the final product was analysed with market samples of the same. The results of analytical values were compared within and between the samples to understand how the proportions and methods of preparation may affect the values. The values obtained from the final products were compared to the values in Ayurvedic Pharmacopoeia of India and tabulated.

Keywords: Guggulu, Simhanada, vata-kaphaja rogas, Amavata

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INTRODUCTION

Guggulu is a widely used resin present in several formulations as the base ingredient or as one of the main ingredients in the formulation. Owing to its properties, it is used in vata and vata kaphaja rogas. Amavata is one such disease wherein Ama, moves to Shleshma Sthana like Sandhi and causes the disease Amavata. Depending on the avastha, the treatment of Amavata is primarily through Langhana, Swedana, Tikta-Deepana-Katu sevana, Virechana, Snehapana or Basti.

Both Simhanada and Vatari Guggulu have been mentioned in Bhaishajya Ratnavali [1, 2] in the context of the same chapter wherein Amavata is explained. The ingredients of these two formulations are Guggulu (*Commiphora mukul*), Triphala (*Terminalia chebula, Emblica officinalis, Terminalia bellarica*), Gandhaka (Sulphur) and Eranda (*Ricinis communis*) Taila. The methods used to prepare are different and apart from Amavata, other specific indications have been explained for both.

This study was conducted to prepare the formulation, and analyse with market samples and values mentioned with API standard values.

MATERIALS AND METHODS

All the raw drugs were collected from the pharmacy at a teaching institute.

Several methods of preparation were adopted for each formulation.

Simhanada Guggulu:

- Ingredients[3]:

Triphala - 48 g each

Water for decoction- 576 ml reduced to 144 ml

Gandhaka - 48 g

Guggulu - 48 g

Eranda Taila - 192 ml

- First method of preparation:

The method explained in Ayurvedic Formulary of India(AFI) volume 1 was followed.

Kashaya of Triphala (*Teminalia chebula, Terminalia bellarica, Embelica officinalis*) was taken and heated with Eranda taila (*Ricinis communis*) till the liquid got concentrated. Gandhaka and guggulu were added to the mixture and heated.

However, during this method of preparation, the two phases of kashaya and taila did not get concentrated together and were separated as two different layers. The gandhaka, though initially taken in a powdered form, coagulated and was present as chunks in the liquid mixture. The guggulu taken in the preparation got charred and thus the final mass could not be rolled into pills.

- Second method of preparation:

Kashaya of Triphala was taken and concentrated. The concentrated mass was added to a khalva, Guggulu, Gandhaka and Eranda Taila were added and and mixed with the aid of the pestle.

During this method of preparation, the ingredients could not be mixed properly to form a homogenous mass which could be rolled into pills.

- Third method of preparation:

All the ingredients were taken in 1/4th of the above quantities mentioned. Pounded guggulu was added to the filtered kashaya and dissolved completely. Shodhita Gandhaka churna was added to a small quantity of Eranda Taila in a darvi, and heated till all the gandhaka melted into the taila. The mixture was added along with the remaining Eranda taila and heated till there was no hissing sound. All the ingredients were added to the khalwa, pounded and mixed well.

The final mixture was homogenous, but entirely liquid and could not be rolled into pills. Hence to get into pill consistency, 50 grams of Triphala churna was added additionally, the final obtained mass was rolled into pills and dried. Obtained pills were soft and pliable but held their structure well.

This sample was used for analysis.

Vatari Guggulu

- Ingredients[4]:

Triphala - 1 Part each

Gandhaka (Shuddha) - 1 Part

Eranda Taila (Vatari Taila) - 1 Part

Guggulu - 1 Part

- First method of preparation:

The method explained in AFI part 1 was followed.

Guggulu and Eranda taila were pounded together till they were in a homogeneous oily paste and the other ingredients were added in churna form. They were mixed with the help of a pestle.

In this method, the final product was not homogenous. Guggulu and the taila separated and though rolled into pills with difficulty, gandhaka oozed out in liquid form because of the quantity of taila.

- Second method of preparation:

All the ingredients were added into a khalva, pounded and mixed well with the help of the pestlefor one hour continuously.

In this method, the churnas absorbed the taila and the final product was in the form of lumps of churna. No amount of pounding or grindingin the khalva made the mixture homogeneous and thus it could not be rolled into pills.

- Third method of preparation:

The prescribed quantity of Guggulu was liquefied in 100ml of hot water. This guggulu was added to a khalwa, Triphala churna and Eranda taila were added and mixed. Gandhaka was added at the end and mixed well. This mixture was grinded and left overnight to dry. The next morning, pills were rolled from the homogenous mass prepared and dried in hot air oven at 40^0C for three hours.

This sample was used for analysis.

RESULTS

The final prepared samples were analysed with market samples and the results were tabulated.

Table 1: **Simhanada Guggulu**

Sample	Market Sample	Prepared Sample	API Values[5]
Organoleptic Characters	Appearance- Greyish, rough to touch Smell - Sulphur smell Taste - Bitter	Appearance - Greenish grey, soft to touch Smell - Sulphur smell Taste - Bitter	
pH	3	3	4.87-5.33
Disintegration	31 minutes 10 seconds	53 minutes	Within 60 minutes (CCRAS)[6]
Friability	0	1%	Less than 1%[7]
Hardness	2.5 kg/m^2	2.5 kg/m^2	4-6
Loss on Drying	12%	10.89%	Not more than 12%
Ash Value	3.6%	2.79%	Not more than 7%

Table 2: Vatari Guggulu

Sample	Market Sample	Prepared Sample	API Values[8]
Organoleptic Characters	Appearance- Black with yellow spots, rough to touch Smell - Sulphur smell Taste - Bitter	Appearance - Blackish grey Smell - Sulphur smell Taste - Bitter	
pH	4	3	4.45 to 4.52
Disintegration	35 minutes	28 minutes	Within 60 minutes
Friability	0	0	Less than 1%
Hardness	2.4 kg/m^2	2.5kg/m^2	4-6
Loss on Drying	14%	10.2%	Not more than 17%
Ash Value	3.93%	4.06%	Not more than 5.5%

Table 3 Comparison between the samples

Parameter	Simhanada (Market)	Simhanada (Prepared)	Vatari (Market)	Vatari (Prepared)
pH	3	3	4	3
Disintegration	31 mins 10 sec	53 minutes	35 minutes	28 minutes
Friability	0	1%	0	0
Hardness	2.5 kg/m^2	2.5 kg/m^2	2.4 kg/m^2	2.5 kg/m^2
Loss on drying	12%	10.89%	14%	10.2%
Ash Value	3.6%	2.79%	3.93%	4.06%

DISCUSSION

1.Simhanada Guggulu

- Pharmaceutical Study:

The specific method to be used or precautions to be taken during the preparation have not been enunciated in Bhaishajya Ratnavali. The amount of castor oil is more in the formulation which is why it is difficult to get this formulation into a pill form. The semi-solid form of Simhanada Guggulu, as obtained initially in the third method of preparation is maybe its intended therapeutic form but is difficult to administer due to its palatability.

In the first and second method, the two phases of kashaya and taila were separated in the final form and guggulu was charred due to the heat. The whole procedure was carried out in stainless steel vessels in mild heat.This indicated that the water from the kashaya needed to be evaporated as much as possible and proper management of heat was necessary to avoid clumping of gandhaka and charring of guggulu.In the third method, guggulu was dissolved in 144 ml of Triphala kashaya which avoided charring, gandhaka melted in taila to avoid clumping and the mixture was heated till absence of hissing sound which indicated very little moisture.

The final sample of Simhanada was homogenous but in a semi solid form which could not be rolled into pills. To make it into a pill form, additionally, 50g Triphala churna was added.

The method of preparation needs to be standardised to be as close to the original formulation as possible. Though an easy and fail-safe method has been explained in Ayurveda Sara Sangraha[9], the proportions are completely different (quantity of eranda taila is very less) and there is a variation even in the method of preparation, i.e., Triphala kashaya is completely omitted from the preparation. The absence of Triphala kashaya and the reduction in the proportion of Eranda Taila may help in bringing it to a pill consistency, but the intention of using these is completely lost.

Though in the final method of preparation, Triphala churna was added additionally, it did not vary the method of preparation completely, and if acceptable to the patient, may be administered even without the additional churna, but in a semi-solid form.

The higher proportion of Eranda taila in this formulation may be to induce rechana and as well as reduce the vata. In the shloka explaining the formulation, forming vati of a particular size is not mentioned. The intention of the authors might have been to leave the formulation in a semi solid form which is difficult to follow due to palatability issues.

- Analytical Study

The market sample of Simhanada Guggulu was a punched tablet and was not soft to touch, but the prepared pills were soft on touch due to the presence of eranda taila in a higher quantity.

The pH of the market sample and prepared sample were lesser than the standard values mentioned in API. This could indicate the role played by the water used for kashaya preparation [10], or the differences in the methods of preparation.

Hardness of the prepared and market sample was lesser than the tablet hardness values but these values are not specific to Guggulu containing tablets.All the other values were within the ranges specified in API.

2. Vatari Guggulu

- Pharmaceutical study

As per the reference in Bhaishajya Ratnavali, no specific ratios have been mentioned for all the ingredients. Taking cue from the anukta mana, all ingredients are added in equal quantities.

In the first method of preparation, guggulu was pounded for a long time along with the Eranda taila and the other ingredients were added. However, after adding the other ingredients, guggulu could not be homogeneously mixed with it and the gandhaka along with the taila, oozed out.

In the second method of preparation, all the ingredients were added together and pounded in a khalwa. In this method, the churnas absorbed all the Eranda taila and the final mass was in the form of clumps of churna and could not be rolled into pills.

In the third method, to ensure that the guggulu gets homogeneously mixed, it was mixed with hot water initially and then the rest of the ingredients were added and mixed. The mixture was left overnight and the next day, it was rolled into pills. To further remove any remnant moisture, pills were dried in hot air oven at 40 degrees.

- Analytical Study

Analytically, the prepared sample, and the market sample vary from the standards mentioned in API.

The pH of the market sample is closer to the standard values and the one prepared is slightly lower. This could be due to the difference in method of preparation, or the quantity of water used.

The hardness of both the tablets was relatively lesser but they were not brittle which can be elucidated from the friability values.

The market sample had a higher loss on drying value which may be due to the difference in procedure adopted.

Ash value of both the samples is within the standard values.

Apart from the slight variation in pH, loss on drying values, the market and prepared samples seemed to be alike.

- Total analysis:

The comparative analysis of both the formulations yielded interesting results. They may have the same ingredients, but the method of preparation and ratios of ingredients vary.

Amongst the four samples, there is only a slight variation in the pH.

The prepared sample of Simhanada Guggulu may have a higher disintegration time due to the extra Triphala Churna added at the end. During granulation, disintegrating agents may be added which might have reduced the disintegration time of the market sample.

Both the prepared samples have a marked difference in the loss on drying. This could be due to the fact that the samples were analysed soon after the preparation (next day) and the market samples were prepared beforehand which may have added some amount of moisture to the sample. The market sample may have been granulated before being punched into tablet which may vary the moisture content.

Ash values of all the samples do not vary too much which shows that even though the proportions of ingredients are different, the values are nearby.

CONCLUSION

The intention of the study was to compare and analyse these two similar formulations.

It yielded results wherein analytically, there was no marked difference between the samples.

The reason behind mentioning two similar formulations in the same chapter of the same book, adding extra and specific ingredients to both the formulations is interesting and needs to be looked into clinically.

Apart from amavata, Simhanada is indicated in khanjya, pangulya, shwasa, kasa, kushta, vatarakta, gulma, and udara shoola. Vatari guggulu is indicated in kati shoola, gridhrasi, khanjya, pangulya, vatarakta, and kroshtukashirsha. Analysis on their usage in above conditions will shed light upon the reason behind the difference in proportions of ingredients.

Most market samples are punched tablets which employ granulation and compression to make the tablets. The market sample chosen in the study was also a punched tablet, but analytically was similar to the prepared sample.

Apart from the method explained in Bhaishajya Ratnavali, several other references are present for Simhanada guggulu, with additional ingredients [11], which should also be prepared and analysed in further studies. Modification of a formulation is a good step as long as it does not change the formulation to such an extent that it is not close to the originally intended formulation anymore. The semi-solid form of Simhanada guggulu, has been modified into a capsule form, which ensured that the original formulation is not altered with. This again needs to be clinically compared with the direct administration of semi-solid simhanada guggulu to the patient and the administration in pill form to conclude if clinically, the effect is retained or enhanced. The higher proportions of churna compared to guggulu and Eranda Taila, made it difficult to get the Vatari Guggulu into a homogenous mass, but the addition of hot water to dissolve Guggulu solved these problems.

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